1. Write a definition of a hydrate in your own words. You may use your book to look up the answer, but phrase it in your own words.

2. By contrast, what does anhydrous mean (in your own words)?

3. Thinking back to the demonstrations with the fruit, and the definitions of hydrate and anhydrous above, what do you think the triangle in the following equation represent?

hydrate anhydrous salt + water

4. Using the numbers collected in class, show how you would calculate the percent of water in the apple by weight.

5. Would using damp laboratory equipment affect your results for identifying your hydrate or calculating the water percentage?

6. How can you be sure that absolutely no residual water is on your vessel before you begin your experiment?

7. Would allowing your dried samples sit overnight before recording the mass affect your results?

8. Would massing your sample while it is still hot or while the vessel is still hot affect your results? Does the temperature matter at all?

9. Take a moment to examine the laboratory equipment on the back lab bench as well as the samples to be tested. Do not handle any of the equipment or samples, do not open any jars or bottles.

Now that you have examined available equipment and the samples to be tested, design a procedure that you can use to determine the percent water composition of the two samples and to determine which sample is a hydrate and which is not. Write this procedure on a separate piece of lined paper. This needs to be a detailed procedure that could be used by anyone in this class with the same success. Remember to also include any safety precautions and equipment that will need to be used.

**Class Procedure & Materials**

Record the procedure that was developed and agreed upon by the entire class, this is the procedure that you will use for the inquiry. Be sure to list all materials that will be needed.

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**Data**

|  |  |  |
| --- | --- | --- |
|  | **Sample A** | **Sample B** |
| **Initial Mass** |  |  |
| **Initial observations about sample** |  |  |
| **Final Mass** |  |  |
| **Final observations about sample** |  |  |

**Class Data**

**Sample A Data:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** |
| **Initial Mass** |  |  |  |  |  |
| **Final Mass** |  |  |  |  |  |

**Sample B Data:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** | **Group \_\_\_** |
| **Initial Mass** |  |  |  |  |  |
| **Final Mass** |  |  |  |  |  |